1   ABSTRACT

2   Methods and apparatus for closed-case removable expansion

3   cards having a removable memory enhance the utility of

4   portable computer hosts, such as PDAs. In both a first and

5   second embodiments the closed-case removable expansion cards

6   preferably use a Type II CompactFlash form factor. In the

7   first embodiment the removable memory is in combination with

8   an external-I/O connector or attached external-I/O device,

9   providing both I/O and memory functions in a single closed-

10   case removable expansion card. This increases the expansion

11   functional density for portable computer hosts, such as PDAs.

12   That is, it increases the amount of functionality that can be

13   accommodated within a given volume allocation for expansion

14   devices. In the second embodiment the removable memory is a

15   private memory for application specific circuitry within the

16   closed-case-removable expansion card. This enhances the

17   utility of portable computer hosts, such as PDAs, as universal

18   chassises for application specific uses. The standard

19   CompactFlash physical and electrical interface couples the

20   application specific card to the host, which provides user

21   interface functions for the application. The cards include a

22   top located slot and an internal connector for accepting a

23   MultiMediaCard as the private removable memory. In addition,

24   the application specific card will generally have some manner

25   of I/O to required external devices, such as scanning devices,

26   sensors, or transducers. Otherwise, all functionality for the

27   application specific function is self-contained within the

28   application specific card.